## Project Introduction

Autonomous and semi-autonomous robotic systems require information about their surroundings in order to navigate properly. A video camera machine vision system can supply position information of external objects, but no range information. Ideally, a system that, in one package, provides 3-dimensional relative information about external objects is needed. To this end, Nanohmics will develop a lightweight, compact, low power, low cost, modular sensor system that produces a depth map of the surroundings. By combining a color optical camera, a multi-element range finding system, and digital processing electronics, a single low cost sensor system can be designed to provide relative position and anti-collision information i.e. a 3-Dimensional Vehicle Imaging Sensor for Incident Obstacle Navigation (3D VISION Mapper

™

). The proposed system could, for example, be mounted on the long-neck mast near the PANCAMs and NAVCAMs on Martian robotic rovers.

Primary U.S. Work Locations and Key Partners
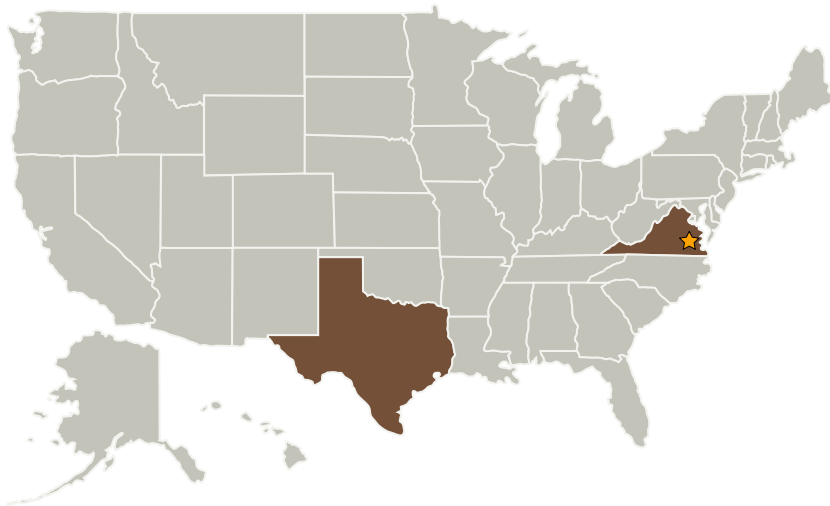
Organizations Performing Work	Role	Type	Location
⭐Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Nanohmics, Inc.	Supporting Organization	Industry	Austin, Texas

Novel Color Depth Mapping Imaging Sensor System, Phase II

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Primary U.S. Work Locations	
Texas	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX04 Robotic Systems
  - └ TX04.5 Autonomous Rendezvous and Docking
    - └ TX04.5.1 Relative Navigation Sensors